

## Pneumatically Controlled On-Off Deluge Valve

### Model FP 400E - 4D

The BERMAD model 400E-4D is an elastomeric, hydraulic line operated deluge valve, designed specifically for advanced fire protection systems and the latest industry standards.

The 400E-4D is controlled by a pneumatic relay valve, typically activated by a decrease in pressure of a pneumatic pilot line. The 400E-4D can also be operated remotely.

The optional valve position indicator can include a limit switch suitable for Fire & Gas monitoring systems.

The Bermad 400E 4D is ideal for use in systems with open nozzles for water or foam discharge also well suited for use with corrosive media or where freezing temperatures might be experienced.



(for Illustration Only)

### Benefits and Features

- **Safety and reliability**
  - Time proven, simple design with a fail safe actuation
  - Single piece, rugged elastomeric diaphragm seal - VRSD technology
  - Obstacle-free, uninterrupted flow path
  - No mechanical moving parts
  - Valve position limit switches (optional)
  - Meets the requirements of industry standards
- **Quick and easy maintenance**
  - Designed for high reliability and easy maintenance
  - In-line serviceable
  - Fast and easy cover removal

### Typical Applications

- Remote control water spray systems
- Foam applications
- Corrosive water supplies
- Freezing Environments

### Approvals



UL-Listed  
Special System Water Control  
Valves, Deluge Type (VLFT)  
Sizes 1½" - 10"



Det Norske Veritas  
Type Approval  
Sizes 1½" - 12"



American Bureau of Shipping  
Type Approval  
Sizes 1½" - 12"

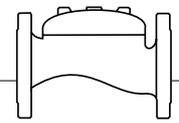


Lloyd's Register  
Type Approval  
Sizes 1½" - 10"

### Additional Options

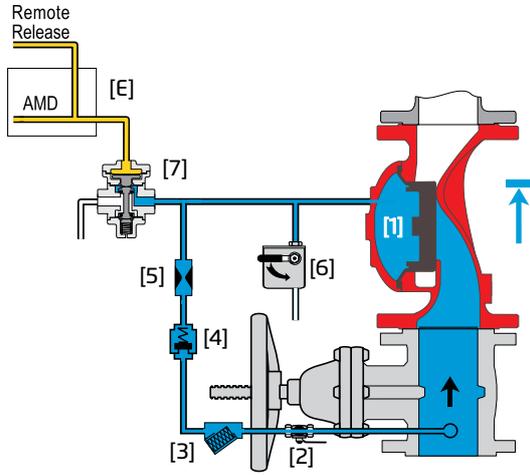
- Valve position limit switches
- Sea water compatibility
- Alarm pressure switch
- Air maintenance device

\* For more additional options, see code designations on last page.

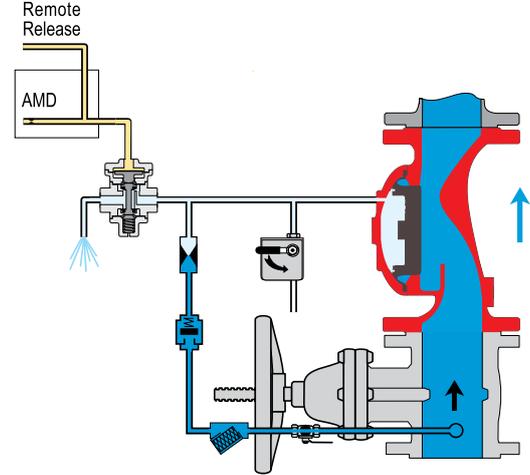


### Operation

(for Illustration Only)



**Valve Closed** (normal conditions)



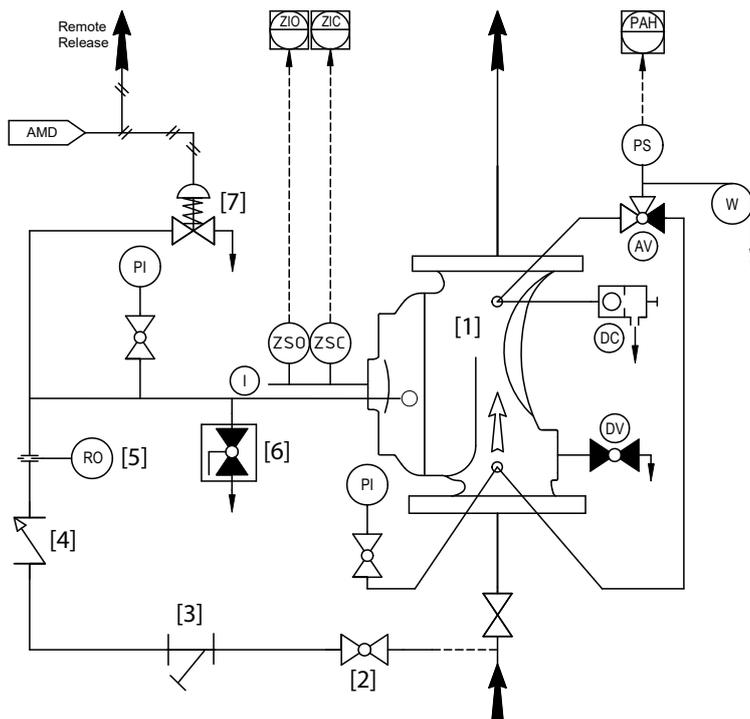
**Valve Open** (fire conditions)

The BERMAD model 400E-4D is held closed by water pressure in the control chamber [1]. Upon release of pressure from the control chamber, the valve opens.

Under NORMAL conditions, water pressure is supplied to the control chamber via the priming line [2] strainer [3] and restriction orifice [5], it is then trapped in the control chamber by a check valve [4], manual emergency release [6], and a relay valve (URV) [7] that is held closed by pneumatic pressure in the dry pilot line [E]. The water pressure trapped in the control chamber holds the diaphragm against the valve seat, sealing it drip-tight and keeping the system pipes dry.

Under FIRE conditions, water pressure is released from the control chamber, either with the manual emergency release, or by the URV opening in response to a decrease in pneumatic pilot-line pressure. This opens the 400E-4D deluge valve, allowing water to flow into the system piping and the alarm devices.

### System P&ID



#### Components

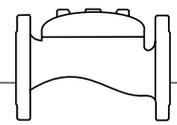
- 1 BERMAD 400E Deluge Valve
- 2 Priming Ball Valve
- 3 Priming Strainer
- 4 Check Valve
- 5 Restriction Orifice
- 6 Manual Emergency Release
- 7 URV-2 Relay Valve

#### Optional System Items

- ZS Limit Switch Assembly
- I Visual Indicator
- PS Pressure Switch
- AMD Air Maintenance Device, AMD-76
- W Water Motor Alarm
- PI Pressure Gauge\*
- DC Automatic Drip Check Valve\*
- DV Drain Valve\*
- AV 3-Way Alarm Ball Valve\*

\* Included with suffix A in valve code (drain and indicating components)

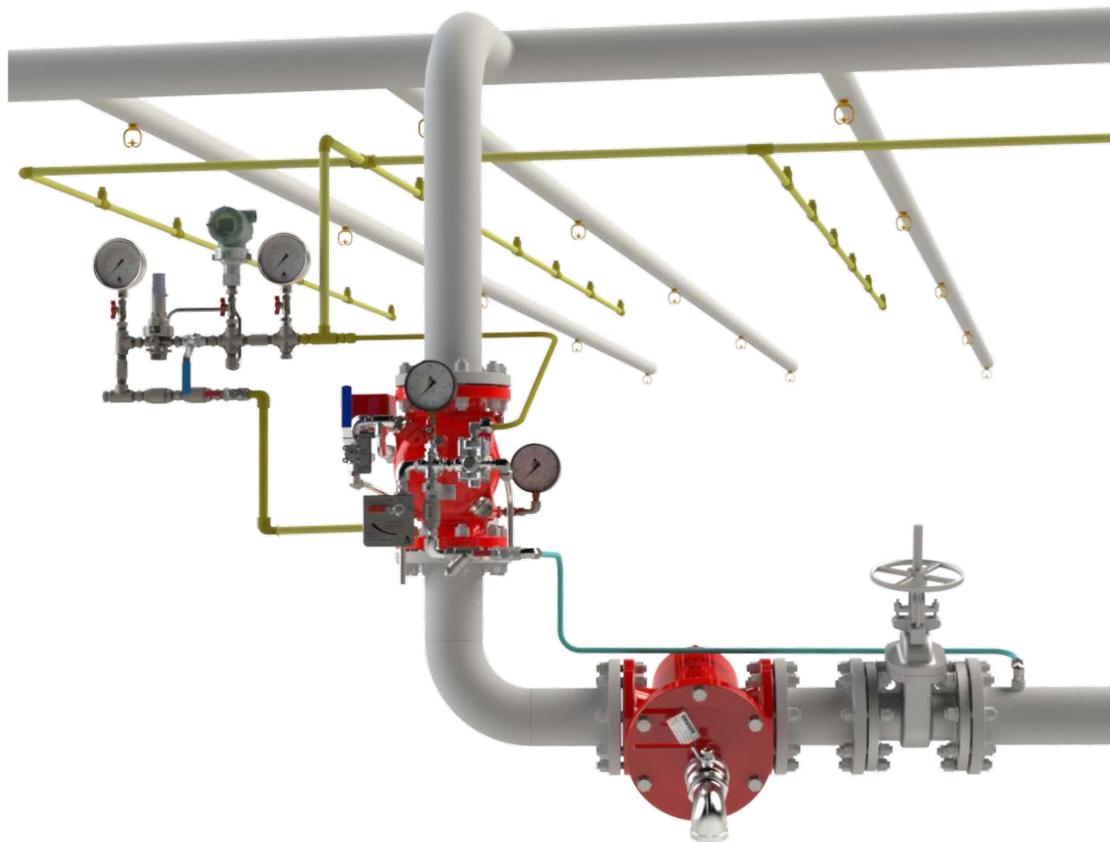
See code designations and additional Factory Fitted Options on page 4



## System Installation

A typical installation of the BERMAD model 400E-4D features actuation via a pneumatic universal relay valve. When open and fitted with a limit switch the valve can send a feedback signal to a remote valve status monitoring system.

## Optional System Items



(for Illustration Only)

## Suggested Specifications

The deluge valve shall be UL-listed.

The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.

Valve actuation shall be accomplished by a single-piece, rolling diaphragm bonded with a rugged radial seal disk.

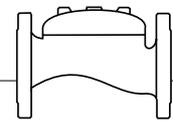
The diaphragm assembly shall be the only moving part.

The deluge valve shall include a relay valve, a Y-type strainer, a ball drain valve, an automatic drip-check with manual override, 4-inch pressure gauges, and a manual emergency release housed in a 316 stainless steel box.

Removing the valve cover for inspection and full maintenance shall be in line and not require removal of the valve from the piping line.

The deluge valve and its entire control trim shall be supplied pre-assembled and hydraulically tested in compliance to the UL 260 standard, by a factory certified to ISO 9000 and 9001 quality assurance standard

# BERMAD Fire Protection



Model FP 400E - 4D

400E Series

## Technical Data

### Available Sizes (inch)

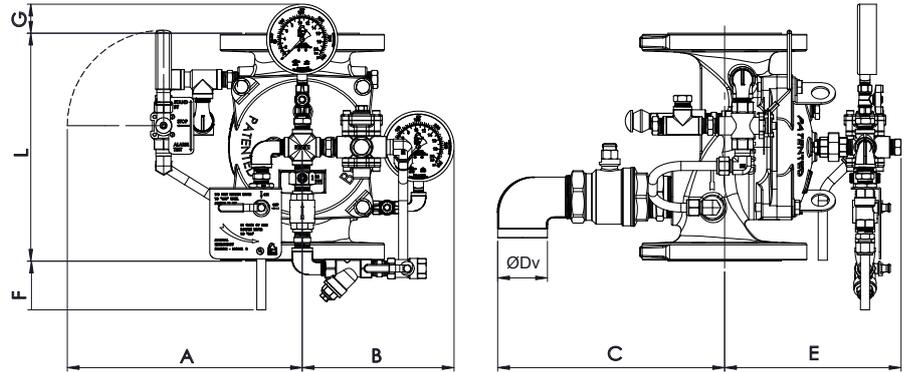
- Flanged - 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
- Grooved - 2, 3, 4, 6 & 8"

### Pressure Rating

- 17.2 bar / 250 psi

### Elastomer

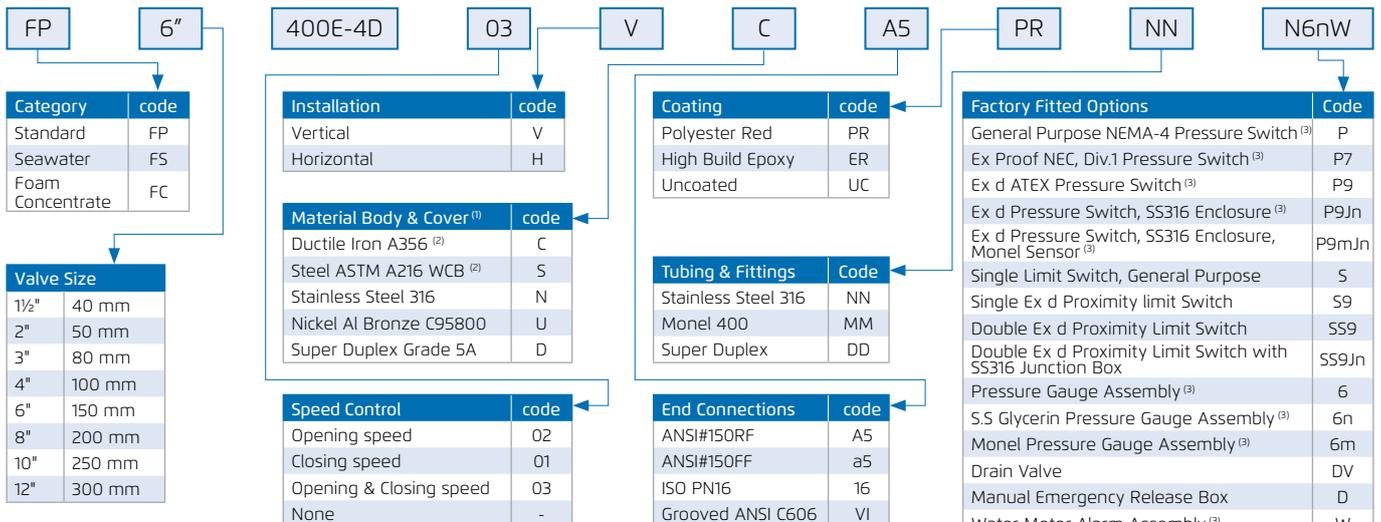
- HTNR with VRSD - Fabric Reinforced High Temperature, see engineering data



Valve Size	1½" DN40		2" DN50		2½" DN65		3" DN80		4" DN100		6" DN150		8" DN200		10" DN250		12" DN300	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
L #150	205	8.1	205	8.1	205	8.1	257	10.1	320	12.6	415	16.3	500	19.7	605	23.8	725	28.5
L Grooved	-	-	205	8.1	-	-	250	9.8	320	12.6	415	16.3	500	19.7	-	-	-	-
A	313	12.3	313	12.3	325	12.8	345	13.6	328	12.9	349	13.7	383	15.1	396	15.6	438	17.2
B	191	7.5	191	7.5	196	7.7	205	8.1	212	8.3	204	8.0	270	10.6	280	11.0	333	13.1
C	199	7.8	199	7.8	253	10.0	266	10.5	316	12.4	347	13.7	364	14.3	384	15.1	422	16.6
ØDv	¾"		¾"		1½"		1½"		2"		2"		2"		2"		2"	
E	203	8.0	203	8.0	205	8.1	238	9.4	258	10.2	334	13.1	385	15.2	382	15.0	513	20.2
F	126	5	126	5	126	5	100	3.9	69	2.7	21	0.8	-	-	-	-	-	-
G	100	3.9	100	3.9	74	2.9	43	1.7	-	-	-	-	-	-	-	-	-	-
Kg / lb	13/29		14/31		18/40		27/60		39/86		83/183		146/322		162/357		250/551	

IMPORTANT: Dimensions for the trim envelope or extents refer to a vertical orientation and may vary with specific component positioning - allow a tolerance of at least ±10%.

## Valve Code Designations



### Notes:

- Other materials available, see engineering data
- Coated internally and externally
- Supplied loose
- Consult BERMAD for availability.

\* More options available - contact BERMAD



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